

Mastering maths

An Aussie maths teacher has developed a fun new way to tackle age-old numerical concepts



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The terms "Podometric" and "Australian Hindu Arabic" (AHA) numeral system may sound blasphemous to purists, but these could well be the hottest additions to the maths lexicon, when Geelong-based Jonathan Crabtree unveils his dream project - *The legend of Podo and the Secret Numbers*.

Maths made easy

Three decades in the making, the picture web book *Legend of Podo* is a novel concept in maths teaching. Aimed at young children and their parents, particularly those with learning difficulties, Crabtree believes it will demystify the subject and make learning "fun, fast and easy".

"AHA not just a new number system, it's a new visual way of learning numbers that matches the way children's brains function through geometric concepts," he claims.

According to Crabtree, because of the left-brain biased education system, students are taught maths inadequately. This inhibits their natural ability to enjoy and understand numbers. With AHA, he hopes: "The clever parent and the astute teacher can now seize upon my insights and leverage them to help their young children and students do better at maths than their peers, yet more importantly, in much less time and with many more smiles!"

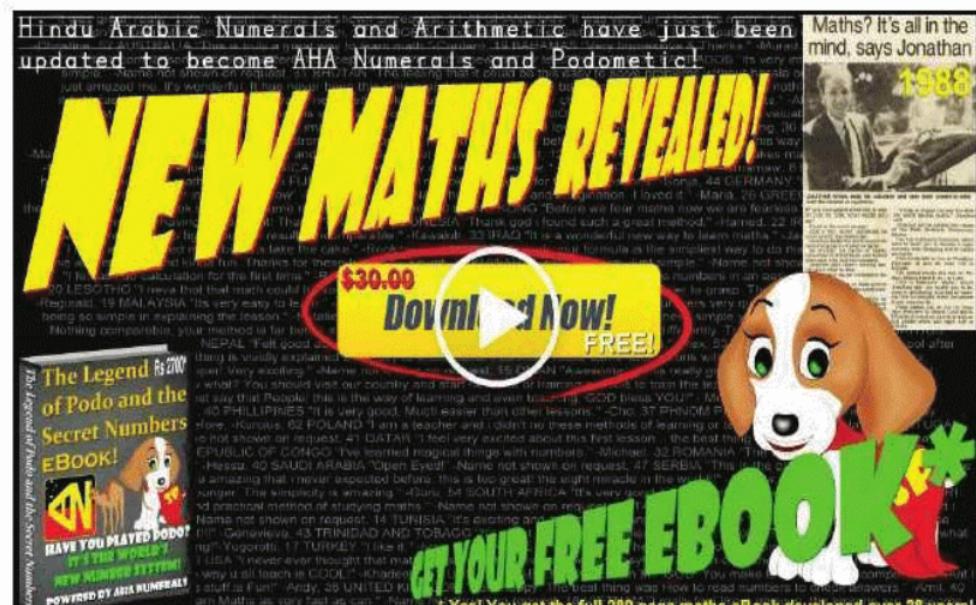
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About Podo

The book, which has been illustrated in Kolkata, is available for download free. "I would particularly like to dedicate this book to the millions of children in India as a token of gratitude to a nation that gave the world the positional decimal numeral system (0-9). India values STEM subjects (Science, Technology, Engineering & Medicine). And maths is essential for all of them," added the Indophile.

The main character in the book is an affable, hyperactive, numlexic puppy named Podo, who overcomes his own fear of numbers and helps many others too. The outcome of a genetic predisposition or quite simply the inability of the brain to process complex number structures, numlexia or dyscalculia is a learning difficulty that relates to numerical concepts and procedures.

Dubbed SP or Stupid Puppy, Podo lives in Metic territory of Australis, a continent in Halo land. Never progressing beyond the number 9, he is often punished by his teacher and scorned by his peers. So he embarks on a numerical adventure across the planet to rediscover his Hindu Arabic roots



and in due course, masters them to become Super Puppy. Podo eventually replaces his mentor Arith, as the ruler of Metic Land.

Using creative visual aids like Bumps, Holes, Power Ups, Circle, Lettumbers, Dig Its, Pig Its, he comes up with the secret number code to unscramble the magical figure of one million - Rain On your Garden Brings It Vegetables (inverse VIBGYOR). Along the way, Podo and his friends Math and Lakeesha tackle fundamental numerical concepts like addition, subtractions, times-tables, place value, dimensions etc, laying the foundation for higher order thinking.

Beyond the conventional

An autodidact, Podo's creator has been teaching Maths to young children since the 80s, making headlines for his unconventional methods and approach. As well, Crabtree has researched and published extensively on the subject, his forte being memory and brain training.

"Back then I taught children arithmetic by getting them to close their eyes and imagine fun stories that also represented mathematical algorithms. Children could remember the story and therefore remember how to do mathematics that their parents and teachers couldn't do," he explains.

Ironically, Crabtree - like millions worldwide - developed a dislike of maths while at primary school. Arithmophobia or fear of numerical concepts is a common phenomenon among students, which if left uncorrected, has a domino effect eventually resulting in aversion and hatred.

"Shy by nature, I do not believe I had any particular learning disorder other than simple lack of interest," he says, recalling his own formative years. "I failed in Maths and had to repeat a year. Yet like most kids, I could focus for hours on what I enjoyed - building and designing with Lego." At school, Crabtree was taught maths with coloured blocks called Cuisenaire rods. Also known as Dienes or MAB blocks, they were a common teaching aid. "To me though, it was like my teachers weren't playing the game right. I didn't like being told a unit had to change into a long to be ten times bigger. Then my teacher made a unit a thousand times bigger into a 3D cube, when many children still hadn't grasped 2D maths and place value. Way too abstract and early for young brains," he adds.

A creative approach

The father of three believes our brains come

hot-wired for geometry before we learn to speak. The use of this type of instruction taught at the same time we learn digits, he adds is, however, the wrong way to teach mathematics. According to Crabtree, the written words and symbols should be taught after the visual maths processing is completely understood.

"By day most people are 'left brain' dominant, processing verbal and numerical language via symbols. Then just as the sun sets, out come the stars and we engage in a more creative and visual right brain thought process, which we call dreaming. That is why I teach maths with bumps and holes, and then morph that idea into left brain symbols and words," he asserts.

Back in the 80s though, his lessons were based on the "same number system, giving children grief for centuries".

"Current teaching techniques have failed despite calculators and laptops. 'There just has to be a better way,' I thought. So I stopped teaching a 'faulty' form of maths and worked on a new enhanced and simpler number system that is so easy, it actually makes sense to young children!" explains Crabtree.

Rather than forcing kids to learn, they should be asked to play - Podo, he quips.

The history behind Podo

So, what got the Podo process going?

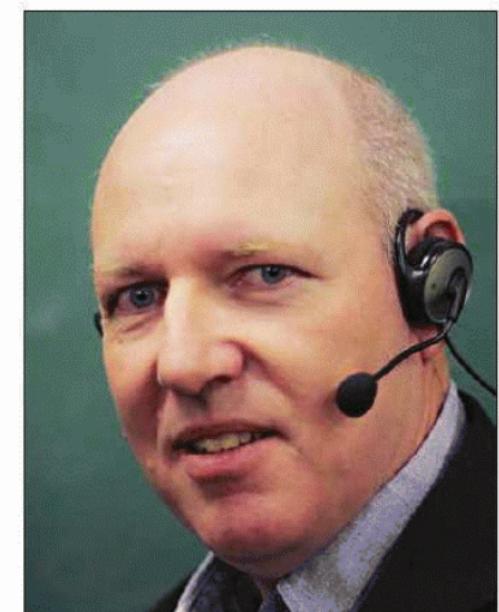
"In 1983 I smashed my spine like a violet crumble when a truck sent me spinning through the air. At 21, my surgeon told me I might never walk again. Bedridden, I prayed for a miracle. Having been a failure in Maths, the deal I made with God was simple. Give me back my life and I will change the way the world does maths," smiles Crabtree.

He learnt to control pain through meditation and mind training, and barely three years later, life was back on track.

"My maths teacher wife and I were expecting our first child. I researched about maths at the Melbourne State Library during lunch breaks, without making much headway. Then our daughter died and I felt guilty about my promise," he recollects.

Crabtree quit his job to teach children maths - with no experience or qualifications. He soon made headlines for his unconventional approach and visualisation techniques. Since then, there has been no looking back.

The biggest hurdle yet for Crabtree has been to convince conventional teachers to adopt his methods. "Teachers like to stick to rules and do not encourage creativity. They



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follow the linear production line approach where children are batched by age and taught numbers step-by-step over seven years. My goal is to let children learn seven years of number theory in as little as seven hours," he says enthusiastically. "I had a tutoring session with a young girl with Downs Syndrome and her mother. For the first time ever, the young girl got every maths question right! I taught this girl maths while we both had our eyes shut! The mother was ecstatic. Yet she discontinued the session as the girl's teacher disapproved of my methods," he says regrettfully.

Just as Hindu Arabic numerals were only accepted after much debate and controversy, so too will AHA. "It will become the biggest breakthrough in numbers and arithmetic since the era of Aryabhata," says Crabtree hopefully.